AMENDMENTS TO THE CLAIMS

The complete listing of all claims will serve to replace all prior versions of the claims.

Listing of claims

1. (Currently amended) A method for the *in vitro* determination of cellular uptake of exogenous ~~or endogenous~~ substances in a cell sample, which method compris[[es]]ing:

1) ~~selecting~~ identifying a ~~suitable~~ shift agent (SA) and a nucleus combination, wherein said SA is able to induce LIS and comprises a lanthanide metal selected from the group consisting of: Ce^{3+}; Pr^{3+};Nd^{3+};Pm^{3+};Sm^{3+}; Eu^{3+}; Tb^{3+}; Dy^{3+}; Ho^{3+}; Er^{3+};Tm^{3+} and Yb^{3+}, and said nucleus in the exogenous substance provides a signal detectable by MAS-NMR selected from the group consisting of ^{13}C, ^{15}N, ^{1}H, ^{31}P, ^{19}F, deuterium, and ^{11}Bo; ~~combination for the measurement of cellular uptake of the exogenous or endogenous substance under investigation, through MAS-NMR spectroscopy, wherein said selection is carried out by:~~

a) ~~identifying a set of possible SA candidates on the basis of~~ detecting the LIS produced by dipole-dipole interaction on at least one NMR signal belonging to said nucleus in said exogenous ~~or endogenous~~ substance;

b) ~~identifying a set of possible candidates for said SA, on the basis of~~ the Cellular Compartments (CC/s) in which said SA ~~they~~ distributes; and

c) selecting said SA and nucleus combination, on the basis of the information gathered from steps (a) and (b) ;

2) ~~determining~~ detecting the ~~cellular compartment/s~~ (CC/s) in which said exogenous [[or]] ~~endogenous~~ substance distributes, through MAS-NMR spectroscopy; and

3) measuring the compartmental concentration of ~~the~~ said exogenous ~~or endogenous~~ substance.

2. (Canceled)

3. (Currently amended) The method according to claim 1 wherein step 2) is carried out by:

d) acquiring the MAS-NMR spectrum of the *in vitro* sample containing the exogenous [[or]] ~~endogenous~~ substance under investigation and determining the marker^{EXO} ~~or marker^{ENDO}~~ signal/s;

e) adding a suitable amount of the selected SA to the above *in vitro* sample, so as to induce a significant LIS of marker^{EXO} ~~or of marker^{ENDO}~~ signal/s, and re- acquiring the same MAS-NMR spectrum; and

f) comparing the marker^{EXO} ~~or the marker^{ENDO}~~ signal/s of steps (d) and (e) and

determining in which Cellular Compartment the exogenous ~~or endogenous~~ substance is present.

4. (Currently amended) The method according to claim 1, wherein the SA comprises lanthanide complexes of ligands selected from: EDTA (ethylenediaminetetracetic acid); PCTA (3,6,9,15-tetraazabicyclo-[9.3.1]-pentadeca-1(15)11,13-triene-3,6,9-tris (methane phosphonic) acid); BOPTA ((4RS)-[4-carboxy-5,8,11-tris (carboxymethyl)-1-phenyl-2-oxa-5,8,11-triazatridecan-13-oic acid]) or derivatives thereof; DTPA (diethylenetriamine pentaacetic acid) or derivatives thereof; DOTA (1,4,7,10-tetraazocyclo-dodecane-N,N',N'',N'''-tetraacetic acid) or derivatives thereof; DO3A (1,4,7,10-tetra azacyclododecane-1,4,7-triacetic acid) or derivatives thereof; DOTP (1,4,7,10-tetraazacyclododecane-1,4,7,10-tetrakis (methane phosphonic) acid or derivatives thereof; and ([3β(R),5β,12α]-3-[[4-[bis[2-bis(carboxymethyl)amino]-ethyl]amino]-4-carboxy-1-oxobutyl]amino]-12-hydroxycholan-24-oic acid)
~~cellular uptake of exogenous substances is determined~~.

5. (Previously presented) The method according to claim 4 wherein the exogenous substance is any substance not naturally occurring in a biological sample.

6. (Previously Presented) The method according to claim 5 wherein the exogenous substance comprises exogenous organic substances or exogenous metals or metal ions which NMR signals can be observed.

7. (Previously Presented) The method according to claim 6 wherein the exogenous substance is selected from the group consisting of: drugs for human and veterinary use, diagnostic and therapeutics agents, contrast agents for imaging techniques, radio-sensitizers for photodynamic and neutron capture therapy, pesticides, herbicides, fertilizers, food additives, preservatives, cosmetics, colorants, waste products, pollutants, and chemicals.

Claims 8 – 11 (Canceled)

12. (Currently amended) The method according to ~~any one of~~ claim[[s]] 1 [[to 3]], wherein the cell sample is selected from human or animal cells, cells cultures, tissues and organ cells, vegetal cells, part of trunks, leaves and food cells of both animal or vegetal origin.

Claims 13 – 14 (Canceled)